Law and Business Review of the Americas

Volume 12 | Number 2 Article 6

2006

Border Wars: Analyzing the Dispute over Groundwater between Texas and Mexico

Philip Dunlap

BORDER WARS: ANALYZING THE DISPUTE OVER GROUNDWATER BETWEEN TEXAS AND MEXICO

*Philip Dunlap**

I. INTRODUCTION

THE area surrounding the United States-Mexico border has long been a fascination of Americans. This allure is apparent through literature, music, and, perhaps most noticeably, film. From old movies like Rio Bravo to more modern movies like Young Guns and Desperado, the borderlands have a unique hold on American attention. This is not surprising considering the history and culture of the border area. For some, the sheer distance of the United States-Mexico border catches their attention. Although the border is extremely long, more than half of the international boundary between these two countries is in Texas, giving the Lone Star State the largest international border of any state in the contiguous United States.[1] The 1,254-mile portion of the Rio Grande (Rio Bravo in Mexico) has been described as the most dramatic international boundary on earth.[2]

The border is defined as the area within 100 kilometers of either side of the international boundary.[3] But for Texas's purposes, the border is more aptly described as all land south of Interstate 10 from El Paso to San Antonio, and then east of Interstate 37.[4] The border has a current population nearing 10 million,[5] which is a 400 percent increase in the last fifty years.[6] The number of people living along the Rio Grande is expected to

---

* Philip Dunlap is a third year law student at Southern Methodist University Dedman School of Law, and this comment won the International Law Review Association's prestigious award–Best Comment of 2005.

1. John Sharp, BORDERING THE FUTURE: CHALLENGE AND OPPORTUNITY IN THE TEXAS BORDER REGION 1 (July 1998), *available at* http://www.window.state.tx.us/border/ch01/ch01.html#1.
2. *Id.*
3. M. Diane Barber, *The Legal Dilemma of Groundwater Under the Integrated Environmental Plan for the Mexican-United States Border Area*, 24 ST. MARY'S L.J. 639, 646 (1993).
4. Sharp, *supra* note 1, at 6.
5. *Id.* at 1.
6. Damien M. Schiff, Article, *Rollin', Rollin', Rollin on the River: A Story of Drought, Treaty Interpretation, and Other Rio Grande Problems*, 14 IND. INT'L & COMP. L. REV. 117, 119 (2003).

rise from the current 5 million to 11 million by 2030.[7] Additionally, the region has experienced a shift from an agricultural based society to a modern industrialized economy.[8] Accompanying this growth, the borderland has seen an increase in the obstacles it faces concerning water availability.[9]

"The essential, defining geographic characteristic of the borderland is its aridity—the scarcity of water."[10] The Rio Grande, the main source of above-ground freshwater in this region, exhibits such scarcity. The once grand river has recently become so low that it even stopped flowing into the Gulf of Mexico.[11] The depletion from over-consumption of the Rio Grande coupled with the widespread drought that occurred in the 1990s has made groundwater the "principal source of supply for many border communities and a necessary resource for agriculture."[12] But reliance on groundwater has also led to the depletion of these sources, particularly in areas along the Rio Grande.[13] The groundwater basins, or aquifers, have been depleted due to several factors, including the population boom in border cities and growth in irrigation-intensive agriculture in the border area.[14]

The scarcity of this resource, coupled with the necessity of water to support all forms of life, has led to a conflict between the United States and Mexico that began as early as 1848 and continues to the present.[15] The conflict remains in part because the United States and Mexico not only share the Rio Grande, but also eighteen groundwater sources.[16] Groundwater is vital to the United States because approximately one-half of the population relies on groundwater as its principal source for drinking water.[17] This number will likely increase in the future as surface water sources are further depleted and/or contaminated.[18] Moreover, resolution of this dispute is complicated by the fact that no official law or treaty on groundwater exists.[19] As a result, the safe and efficient use of surface and groundwater remains one of the most pressing issues in

7. Hugh Dellios, *Sharing the Rio Grande; Water Problems are Wave of the Future*, CHI. TRIB., July 7, 2002, at 1.
8. Steven G. Ingram, *In a Twenty-First Century "Minute,"* 44 NAT. RESOURCES J. 163 (2004).
9. *See* Raimo Vayrynen, *Environment, Violence, and Political Change*, 15 NOTRE DAME J.L. ETHICS & PUB. POL'Y 593, 605 (2001).
10. Vivienne Bennett & Lawrence A. Herzog, *U.S.-Mexico Borderland Water Conflicts and Institutional Change: A Commentary*, 40 NAT. RESOURCES J. 973, 973 (2000).
11. Dellios, *supra* note 7.
12. Maria Rosa Garcia-Acevedo & Helen Ingram, *Conflict in the Borderlands*, NACLA REP. ON THE AMERICAS, July 1, 2004, at 19, 19.
13. *Id.*
14. *Id.*
15. Amy Hardberger, Comment, *What Lies Beneath: Determining the Necessity of International Groundwater Policy Along the United States—Mexico Border and a Roadmap to an Agreement*, 35 TEX. TECH L. REV. 1211, 1234 (2004).
16. *Id.*
17. A. DAN TURLOCK, LAW OF WATER RIGHTS AND RESOURCES § 4:4 (2004).
18. *Id.*
19. *See* Hardberger, *supra* note 15, at 1215.

United States-Mexico boundary relations.[20]

This comment will examine the conflict over shared groundwater between Texas and Mexico and evaluate possible resolutions. Part II traces the development of groundwater and how treaties have dealt with international groundwater in the past.[21] Part III discusses the current state of groundwater law in Texas and Mexico[22] and the various agreements concerning international water and groundwater.[23] Part IV examines possible remedies and suggests the course of action the United States, specifically Texas, and Mexico should take.[24] Finally, Part V concludes with a review of the shared groundwater sources and a proposal for maintaining an adequate water supply for both sides of the border.[25]

II. HISTORY OF GROUNDWATER LAW

"Water law has historically treated surface and sub-surface water separately."[26] But this view should no longer be accepted because scientists now recognize that the interrelatedness of surface water and groundwater is necessary for groundwater administration.[27] Groundwater and surface water sources are both part of the hydrologic system.[28] The hydrologic system, or cycle, is the system where "water – solid, liquid, gas, or vapor – travels from the atmosphere to the Earth and back again in a constant cycle of renewal."[29]

The hydrologic cycle has been called "the continuous circulation of water on earth."[30] This occurs as water falls to the earth as precipitation in the form of rain, snow, or sleet.[31] Upon hitting the land it becomes surface water, typically running over the land into rivers, lakes, or streams.[32] Any time water exists as surface water it eventually evaporates and returns to the atmosphere, beginning the cycle again.[33]

Alternatively, water may seep or percolate into the ground becoming groundwater.[34] Water that percolates seeps into the earth vertically until reaching the groundwater table.[35] At that point, the water begins to flow laterally "through the porous spaces in the geologic formation, thereby

20. Leonard B. Dworsky & Albert E. Utton, *Assessing North America's Management of its Transboundary Waters*, 33 NAT. RESOURCES J. 413 (1993).
21. *See* discussion *infra* Part II.
22. *See* discussion *infra* Part III.
23. *See* discussion *infra* Part III.
24. *See* discussion *infra* Part IV.
25. *See* discussion *infra* Part V.
26. TURLOCK, *supra* note 17, § 4:35.
27. Barber, *supra* note 3, at 651.
28. TURLOCK, *supra* note 17, § 4:5.
29. Gabriel Eckstein & Yoram Eckstein, *A Hydrogeological Approach to Transboundary Ground Water Resources and International Law*, 19 AM. U. INT'L L. REV. 201, 207 (2003).
30. Hardberger, *supra* note 15, at 1214.
31. Eckstein, *supra* note 29, at 207.
32. *Id.* at 207-08.
33. *Id.* at 208.
34. *Id.*
35. *Id.*

forming an aquifer."[36] Once groundwater has become part of an aquifer, it may discharge in the form of surface water and eventually evaporate into the atmosphere, beginning the cycle again.[37] Although the rate of percolation into the groundwater table and the flow of water within aquifers are not as fast as the flow of surface water, both processes are consistent; thus, even regarding groundwater, the hydrologic cycle remains continuous.[38] Water appears in solid, liquid, and gaseous states. But, because the total amount of water in nature is fixed, the volume in each state varies at any time.[39]

Unfortunately, the law of groundwater has not always recognized such a continuous relationship despite attempts by lawyers to integrate these rules of nature.[40] Because groundwater has largely been seen as incidental to land ownership, it has rarely been regulated per se.[41] While scientists have finally accepted and professed the idea that surface water and groundwater are interrelated, most "states cling to their historical doctrines, unwilling to consider what modern science has revealed."[42]

A. Development of Groundwater Law

Groundwater is defined as "[w]ater found in layers of permeable rock or soil."[43] It has also been described as the type of "water from which wells and springs are fed."[44] While both definitions are fitting, the term is perhaps best defined as "subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated."[45] Groundwater is most often found in aquifers, or "geological formations that store, transmit, and yield . . . water."[46] As aquifers are depleted, they can be replenished by underground and surface streams and by precipitation as it seeps through to the aquifers.[47] But even within aquifers, groundwater is distinguished by the manner in which it travels through the soil.[48]

Groundwater may be percolating as part of an underflow or an underground stream, or part of an artesian source.[49] Percolating water "oozes

36. *Id.*
37. Hardberger, *supra* note 15, at 1214.
38. Eckstein, *supra* note 29, at 209.
39. Julio Barberis, *The Development of International Law of Transboundary Groundwater*, 31 Nat. Resources J. 167 (1991).
40. Turlock, *supra* note 17, § 4:5.
41. Barber, *supra* note 3, at 641.
42. *Id.* at 651; *Cf.* Turlock, *supra* note 17, § 6:20 (explaining the integration of surface and groundwater rights in New Mexico).
43. Black's Law Dictionary 1622 (8th ed. 2004).
44. Joseph L. Sax et al., Legal Control of Water Resources 973 (2d ed. 1991).
45. Hardberger, *supra* note 15, at 1217 (internal citations omitted).
46. Dylan O. Drummond, Comment, *Texas Groundwater Law in the Twenty-First Century: A Compendium of Historical Approaches, Current Problems, and Future Solutions Focusing on the High Plains Aquifer and the Panhandle*, 4 Tex. Tech. J. Tex. Admin. L. 173, 175-76 (2003).
47. *Id.* at 176.
48. *Id.* at 210.
49. *Id.*

or seeps through the soil without a defined channel."[50] Alternatively, underflow has been described as "aquiferous water that flows beneath a surface water course, mainly occurring in sand and gravel deposits found beneath a surface water course's streambed, but hydrologically connected to the surface flow of the stream."[51] An underground stream is a subsurface watercourse that has all the characteristics of a surface watercourse, including ascertainable banks and channels, but exists underground.[52] Finally, artesian water is "groundwater confined under pressure by an impermeable geologic layer."[53] Because the majority of groundwater found near the Texas-Mexico border exists in aquifers, the chief focus of this comment will be on the groundwater found in aquifers in general.[54]

1. English Rule–Absolute Ownership

Groundwater law began as a simple rule of capture that only applied to owners of land overlying groundwater.[55] This first rule of law was the absolute ownership rule, or the English rule, which holds that the "overlying landowner has an unqualified privilege to extract groundwater for any purpose regardless of the consequences to surrounding landowners."[56] This rule developed from the case of *Acton v. Blundell,* where the extraction of groundwater was analogized to the erection of an artificial structure.[57] The court in *Acton* found that, because the promotion of land development was important, it did not want to restrict a landowner's ability to extract groundwater from his property.[58] These rules led to the notion that "[a]djoining landowners injured by pumping are limited to the remedy of self-help."[59] Additionally, the rule of capture allowed a landowner to withdraw limitless amounts of water from beneath his property without any liability being imposed for causing harm to his neighbor who relies upon the same aquifer.[60]

In addition to unlimited use, under the English rule no ownership rights in groundwater develop until someone actually pumps the water.[61] Moreover, because groundwater goes unseen for the most part, American courts initially held it would be unfair to compel landowners to redress wrongs that could not have been noticed.[62] Early American courts analogized underground water to minerals *ferae naturae* because it has the abil-

50. BLACK'S LAW DICTIONARY 1622 (8th ed. 2004).
51. Drummond, *supra* note 46, at 210 n.313.
52. Richard Ausness, *Water Rights Legislation in the East: A Program for Reform*, 24 WM. & MARY L. REV. 547, 550 (1983).
53. Drummond, *supra* note 46, at 210 n.315.
54. *See* Hardberger, *supra* note 15, at 1234.
55. TURLOCK, *supra* note 17, § 4:6.
56. *Id.*
57. *Id.* (internal citations omitted).
58. *See id.*
59. *Id.*
60. Drummond, *supra* note 46, at 197.
61. *Id.*
62. *See* Wheatley v. Baugh, 25 Pa. 528, 534 (1855); TURLOCK, *supra* note 17, § 4:6.

ity "to escape without the volition of the owner."[63] This comparison allowed the English rule, or rule of capture, to be justified by American courts.[64] While the doctrine of absolute ownership was extended for some time by American courts to include allowances for malicious pumping, today most courts would not allow purely malicious pumping of groundwater since such actions are inefficient and unfair.[65]

2. American Rule–Reasonable Use

In the late nineteenth century and early twentieth century, many common law states abandoned the English rule in favor of the American or reasonable use rule.[66] The New Hampshire Supreme Court first described this rule, holding that landowner's rights are correlative and that each landowner should be "restricted the reasonable exercise of his own rights and a reasonable use of his own property in view of the similar rights of others."[67]

The American rule developed when high capacity pumping upset existing pumpers' expectations about the accustomed rules of competition for groundwater.[68] When municipalities began to sink high capacity wells in rural areas in order to extract water for city use, courts limited the use of groundwater to overlying lands in order to protect farmers from unfair competition.[69] This rule also developed as a response to the rule of capture, essentially qualifying that rule.[70] The reasonable use rule has slowly gained acceptance, and today many states follow some form of this use rule, including Alabama, Arizona, Florida, Illinois, Iowa, Kentucky, Maryland, Michigan, New Hampshire, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Washington, and West Virginia.[71]

The American rule exists as a modified absolute ownership rule.[72] The distinguishing factor is the requirement of a reasonable use of water.[73] Whether water use is reasonable is determined by a number of factors, including "well location, amount of water, and the proposed use and placement of the water."[74] In addition to the American rule, the reasonable use rule also encompasses the Restatement rule.[75] The difference in these two rules centers on the use of the water once it has been with-

63. *See* Westmoreland & Cambria Nat. Gas Co. v. DeWitt, 18 A. 724, 725 (Pa. 1889); TURLOCK, *supra* note 17, § 4:6.
64. TURLOCK, *supra* note 17, § 4:6.
65. *Id.*
66. *Id.* § 4:7.
67. TURLOCK, *supra* note 17, § 4:7; Bassett v. Salisbury Mfg. Co., 43 N.H. 569, 577 (1862)
68. TURLOCK, *supra* note 17, § 4:8.
69. *See* Volkmann v. City of Crosby, 120 N.W.2d 18 (N.D. 1963); TURLOCK, *supra* note 17, § 4:8.
70. TURLOCK, *supra* note 17, § 4:8.
71. *Id.* § 4:7; Drummond, *supra* note 46, at 198.
72. Drummond, *supra* note 46, at 198.
73. *Id.* at 197.
74. *Id.*
75. *Id.* at 198.

drawn from an aquifer. The American rule allows the withdrawn water to be used only on the land overlying the aquifer or within the same drainage basin, while the Restatement rule permits the withdrawn water to be used outside of the overlying land.[76] Under the American rule, groundwater use has three restraints: "(1) The use must be reasonable, (2) the use must be for a beneficial purpose on the overlying land, and (3) use on non-overlying land is per se unreasonable."[77] Thus, municipalities are held liable for pumping water from an aquifer and then transporting that water for city use if the city does not sit over the aquifer.

3. Texas Groundwater Law

Groundwater law, like most other areas of law in Texas, developed from Spanish and Mexican law.[78] In fact, water rights that arose from surface estates in Texas prior to established common law are governed by the Spanish or Mexican law that stood in place at the time of the land grant.[79] Because Texas became a Republic upon achieving independence from Mexico and later became a state of the United States, the law of Texas changed from Mexican and Spanish law while under Mexican authority, to Texas law while an independent republic, to a mix of federal and state law as part of the United States.[80] Thus, water law in Texas has gone through change and evolutions over time, but has finally settled at the rule of capture, or absolute ownership.[81]

In 1904, the Texas Supreme Court adopted the English rule of absolute ownership.[82] In that decision, the court held that a defendant railway company's digging of a well on its property, which was absorbing waters percolating through the ground and depriving plaintiff of the use of his well, was not an actionable wrong, even though the court found that the defendant's use of its well was unreasonable.[83] Thus the court established the rule of capture, allowing a landowner to enjoy unlimited rights to groundwater regardless of the effect on adjacent landowners, which has been consistently upheld by Texas courts.[84]

Although many other states have adopted the reasonable use or American rule throughout the years, Texas has continued to follow the rule of capture.[85] One reason suggested for why Texas has not modified its groundwater law despite other states' making the change is that, "Texas's pervasive culture of private ownership causes citizens to think property possession extends to unlimited use of all associated resources, which cre-

76. *Id.*
77. TURLOCK, *supra* note 17, § 4:8.
78. Hans W. Baade, *The Historical Background of Texas Water Law—A Tribute to Jack Pope*, 18 ST. MARY'S L.J. 1, 21 (1986).
79. *Id.*
80. TURLOCK, *supra* note 17, § 5:10
81. *Id.* § 4:6.
82. Houston & T.C. Ry. Co. v. East, 81 S.W. 279 (Tex. 1904).
83. *Id.* at 280, 282.
84. Barber, *supra* note 3, at 678-79.
85. Drummond, *supra* note 46, at 208.

ates a significant barrier to groundwater law modification."[86] This inclination towards private ownership exists in Texas because over 94 percent of land is privately owned.[87] Therefore, federal law may have less influence on Texas than it would in another state.[88] This has also led to Texas's being one of only a few states that still follows the absolute ownership rule.[89]

The Texas Supreme Court has continually upheld the doctrine, as seen in recent cases like *Friendswood Development Co. v. Smith-Southwest Industries, Inc.*, and *Sipriano v. Great Spring Waters of America, Inc.*[90] In *Friendswood*, plaintiffs alleged that defendants caused severe subsidence, or sinking of the ground, on their land due to continued withdrawal of underground water from wells on defendant's land.[91] The court refused to limit the withdrawal of groundwater without any showing of willful waste or malicious injury.[92] But the court did establish prospective liability for negligent pumping that is a proximate cause of the neighboring land's subsidence.[93]

Likewise, the court has upheld the rule of capture as recently as 1999 when it rejected the theory of reasonable use in *Sipriano*.[94] There, property owners sued a water bottler for negligently draining their water wells.[95] The court refused to substitute the reasonable use rule, instead choosing to follow the established Texas law of the rule of capture.[96] The reasoning was "that the sweeping change to Texas's groundwater law [plaintiff] Sipriano urges this Court to make is not appropriate at this time."[97] The court declined to change the Texas common law because it felt the change in law should occur as a result of the legislature.[98] This decision was based in part on the *Friendswood* holding that groundwater falls under the police power of the state because it qualifies as real property.[99] Therefore, until Senate Bill 1[100] enacts some change, the rule of capture remains the groundwater law in Texas.

---

86. Hardberger, *supra* note 15, at 1222.
87. Drummond, *supra* note 46, at 203.
88. *See id.*
89. TURLOCK, *supra* note 17, § 4:6 (Connecticut, Louisiana, Maine, and Rhode Island are the other states).
90. Friendswood Dev. Co. v. Smith-Southwest Indus., Inc., 576 S.W.2d 21 (Tex. 1978); Sipriano v. Great Spring Waters of Am., Inc., 1 S.W.3d 75 (Tex. 1999).
91. *Friendswood*, 576 S.W.2d at 21.
92. *Id.* at 22.
93. *Id.* at 30.
94. Drummond, *supra* note 46, at 209.
95. *Sipriano*, 1 S.W.3d at 75.
96. *Id.*
97. *Id.*
98. Drummond, *supra* note 46, at 210.
99. *Friendswood*, 576 S.W.2d at 30; Drummond, *supra* note 46, at 210.
100. *See* discussion *infra* Part III(A).

4. Mexican Groundwater Law

Similar to Texas, groundwater law in Mexico developed from Spanish law. New Spain, the area that included present day Mexico and Texas, applied Las Siete Partidas (Partidas), a civil code developed by King Alonso V in 1265 to govern water allocation and disputes.[101] The Spanish derived their law partly from Roman law, but also from Moorish law.[102] Roman law, like Native American law, held that running water was not the property of an individual, but rather common to all.[103] Running water was classified as "'*res communes*' [meaning] 'things common'", similar to the air, the sea, fish and wild beasts, and the light and heat of the sun.[104] Roman law included running water in this group because at one instant it is in one place in the river, then it is gone and some other water has succeeded it, without anyone having been able to say that he had it as his own; a thing of continual motion and ceaseless change, not susceptible of exclusive possession nor, hence, of ownership.[105]

But Roman law maintained a distinction between the use of the water and the water itself.[106] Thus, Spanish law under the Partidas maintained the same distinction.[107] This difference between water use and ownership provided the basis for the Partidas groundwater law provision, stating that a landowner could dig a well even if that well reduced a neighbor's subsurface water.[108] The only limitation on this right to pump water was that it could not be done maliciously just to deny access to an adjacent landowner.[109]

While Roman tradition had a significant influence on Spanish law, the Moorish influence is thought responsible for the idea in former Spanish colonies that water belonged to the community.[110] A water law scholar has noted:

> It is important in considering the Spanish system to bear in mind that its primary concern was with the common use of waters, with their administration in such a fashion that the community interests were served and the fertility of the land preserved, rather than with prior and exclusive rights.[111]

Spanish law was similar to the English rule of absolute ownership, but added that water underlying public lands constitutes public ground-

101. Barber, *supra* note 3, at 656.
102. *Id.*
103. *Id.*
104. Harbert Davenport & J.T. Canales, *The Texas Law of Flowing Waters with Special Reference to Irrigation from the Lower Rio Grande*, 8 BAYLOR L. REV. 138, 159 (1956).
105. *Id.*
106. *Id.*
107. *See* Barber, *supra* note 3, at 657.
108. *See id.*
109. *Id.* at 659.
110. *Id.* at 658.
111. BETTY E. DOBKINS, THE SPANISH ELEMENT IN TEXAS WATER LAW 98 (1959); *see also* Barber, *supra* note 3, at 661.

water.[112] Thus, even to this day, Mexican law has maintained the distinction between public and private groundwater.[113] This distinction explains why the Mexican government regulates groundwater use based on the order of priorities for the water source.[114] Thus, the government may declare a public use of groundwater as more important than a private use.

B. Treaties Covering Groundwater

Because Texas and Mexico have always been and will continue to be linked by their shared use of the Rio Grande and aquifers, this unique relationship must be recognized in any attempt to establish rules governing both nations.[115] But because Texas, as part of the United States, and Mexico are separate nations, they do not have a uniform law governing their shared water resources. "The joint use of international watercourses has always depended on the cooperation between countries along their banks, regulated in some cases by international treaties and organizations."[116] Thus, the United States and Mexico have historically relied on treaties to administrate their water matters. But because treaties and agreements that have mentioned international groundwater have rarely made it the focus, little consensus exists on how to handle groundwater issues.[117] Due to the dearth of international groundwater treaties in existence, an examination of past international water treaties is necessary to see what a new groundwater treaty covering Texas and Mexico should include.

1. Nineteenth-Century Treaties

In 1848, the United States and Mexico ended the Mexican-American War by enacting the Treaty of Peace, Friendship, Limits, and Settlement with the Republic of Mexico, otherwise known as the Treaty of Guadalupe Hidalgo.[118] Article VII of the treaty provided, in regards to the Rio Grande as the international border, that both nations have the right to navigate the waters but that neither can unilaterally "construct any work that may impede or interrupt, in whole or in part, the exercise of this right."[119] Article VII of the treaty was later reaffirmed in 1853 by the signing of the Gadsden Purchase.[120] Mexico relied on this provision to protest the construction of the Elephant Butte Dam in New Mexico, stating that the development would reduce the flow of water reaching

112. Hardberger, *supra* note 15, at 1243.
113. *See id.*
114. *Id.*
115. *See* Ingram, *supra* note 8, at 168.
116. *Id.* at 167.
117. Hardberger, *supra* note 15, at 1221.
118. Treaty of Peace, Friendship, Limits, and Settlement With the Republic of Mexico, U.S.-Mex., Feb. 2, 1848, 9 Stat. 922 [hereinafter Treaty of Guadalupe Hidalgo]; *see* Schiff, *supra* note 6, at 119.
119. Treaty of Guadalupe Hidalgo, *supra* note 118, art. VII; Schiff, *supra* note 6, at 119.
120. Treaty with Mexico, U.S.-Mex., Dec. 30, 1853, 10 Stat. 1031; *see also* Schiff, *supra* note 6, at 120.

Mexican citizens in the Rio Grande Valley.[121]

The United States initiated communication with Mexico regarding use of the Rio Grande in 1880 when Texas farmers were upset at having been deprived of irrigation due to ditches built by Mexican farmers along the Mexican side of the river.[122] Mexico responded four years later by claiming that its citizens had suffered more in 1880 than the Americans because that year had been extremely dry.[123] The Mexicans also asserted that they had prior appropriation claims against the United States over Rio Grande water due to a dam located near El Paso/Ciudad Juarez.[124] Furthermore, the Mexicans alleged that American citizens in Colorado and New Mexico had wastefully used the Rio Grande and that such waste had further aggravated the water problems.[125] In response to the ongoing conflicts, in 1889, both nations created the International Boundary Commission (IBC), a precursor to the still-existent International Boundary and Water Commission (IBWC).[126] Despite the creation of the IBC, disagreements and discussions between the two countries continued, prompting U.S. Attorney General Judson Harmon to issue an opinion in 1895, which became known as the Harmon Doctrine.[127] The opinion stated that as an absolute sovereign under accepted principles of international law, the United States had no duty to prohibit its citizens from enjoying use of the water within its boundaries.[128]

But despite the Harmon Doctrine, and because the IBC was unable to resolve the Elephant Butte Dam conflict or other apportionment disputes, in 1896 both the United States and Mexico requested for the IBC to develop a solution to Rio Grande problems.[129] After all, the mandate of the IBC "was to settle '(a)ll differences or questions that may arise on . . . the frontier between the United States . . . and . . . Mexico where the Rio Grande and the Colorado rivers form the boundary line.'"[130] The IBC subsequently recommended that both nations develop a treaty to resolve all future water disputes.[131] This recommendation, along with the other water disputes, led to the first water distribution treaty between

121. Schiff, *supra* note 6, at 120.
122. Barber, *supra* note 3, at 680.
123. *Id.*
124. *Id.*
125. Ingram, *supra* note 8, at 169.
126. Convention Between the United States of America and the United States of Mexico to Facilitate the Carrying Out of the Principles Contained in the Treaty of November 12, 1884, and to Avoid the Difficulties Occasioned by Reason of the Changes Which Take Place in the Bed of the Rio Grande and That of the Colorado River, U.S.-Mex., Mar. 1, 1889, 26 Stat. 1512; *see also* Schiff, *supra* note 6, at 120.
127. Treaty of Guadalupe Hidalgo – International Law, 21 Op. Att'y. Gen. 274 (1895) [hereinafter Harmon Doctrine]; *see also* Ingram, *supra* note 8, at 169.
128. Harmon Doctrine, *supra* note 127, at 274; *see also* Barber, *supra* note 3, at 681.
129. Schiff, *supra* note 6, at 120; Ingram, *supra* note 8, at 169.
130. Ingram, *supra* note 8, at 170 (quoting James Simsarian, *The Diversion of Waters Affecting the United States and Mexico*, 17 TEX. L. REV. 27 (1938)).
131. *Id.*

the United States and Mexico–the 1906 Rio Grande Convention.[132]

2. *The 1906 Treaty*

The 1906 Rio Grande Convention intended to eliminate "all causes of controversy" between the United States and Mexico regarding the Rio Grande.[133] The preamble expressly declared that the convention covered "equitable distribution of the waters of the Rio Grande for irrigation purposes."[134] Article I of the Rio Grande Convention required the United States to annually deliver, and pay for the associated costs of such delivery, 60,000 acre-feet of water from the Elephant Butte Dam to Mexico.[135] In the event of extraordinary drought, article II allowed the United States to diminish the amount of water it delivered to Mexico in proportion to the amount delivered to various lands in the United States.[136] While Mexico benefited from the 1906 Convention in terms of water distribution, the convention did nothing more than serve as a general, non-binding agreement. Article V clearly stated that the 1906 Rio Grande Convention established no legal principle or precedent.[137] This principle has been prevalent in many agreements between the two nations. Therefore, the United States could not be required to deliver additional water in another setting based on the 1906 Convention. The limited nature of the 1906 Convention led to both nations' desire to implement the 1944 Treaty, which still remains in effect.[138]

III. CURRENT LAW

A. Texas Groundwater Law

As discussed earlier, Texas has adhered to the rule of capture for its groundwater law since the Texas Supreme Court's 1904 decision in the *Houston and Texas Central Railway* case.[139] But three exceptions have developed to somewhat modify the rule of capture.[140] These exceptions are: "(1) groundwater must be percolating, (2) groundwater that is withdrawn from underneath one's own land may not be subject to waste, and (3) groundwater cannot be withdrawn in order to maliciously injure another."[141]

The requirement that groundwater must be percolating is important because when groundwater is held as percolating, it falls within the doc-

132. Schiff, *supra* note 6, at 122.
133. Convention Between the United States and Mexico Providing for the Equitable Distribution of the Waters of the Rio Grande for Irrigation Purposes, U.S.-Mex., May 21, 1906, 34 Stat. 2953 [hereinafter 1906 Rio Grande Convention].
134. *Id.* pmbl.
135. *Id.* art. I; Schiff, *supra* note 6, at 122.
136. 1906 Rio Grande Convention, *supra* note 133, art. II; Schiff, *supra* note 6, at 122.
137. 1906 Rio Grande Convention, *supra* note 133, art. V; Ingram, *supra* note 8, at 171.
138. *See* Schiff, *supra* note 6, at 123-24.
139. *Houston & T.C. Ry. Co.*, 81 S.W. at 279; *see* discussion *supra* Part II(A)(3).
140. Drummond, *supra* note 46, at 213.
141. *Id.* (internal citations omitted).

trine of private ownership and thus is subject to the rule of capture.[142] Additionally, Texas law assumes that all groundwater is percolating by default.[143] But if groundwater is an underflow or part of an underground stream, the state owns that groundwater.[144] In that situation, the groundwater becomes the property of Texas and is not subject to the rule of capture. Nonetheless, there have been instances where the Texas legislature has determined that disputed groundwater was not an underflow or an underground stream.[145] Thus, absent a unique case of groundwater being seen as anything but percolating, any groundwater in Texas will be held as percolating. Therefore, absent a special finding of being an underflow, any groundwater in Texas is subject to the rule of capture.[146]

1. Senate Bill 1

After nearly 100 years of Texas following the rule of capture, the Texas Legislature made the first significant change when it enacted Senate Bill 1 during the seventy-fifth regular legislative session in 1997.[147] Senate Bill 1 has been described as "the most exhaustive rewrite of Texas water law in the last thirty years."[148] Several developments led state leaders and legislators to organize and push for the adoption of Senate Bill 1.[149] The three chief factors were: (1) the severe drought in the mid 1990s, (2) the estimated population boom and the ensuing "potential tapping out of Texas's water supply,"[150] and (3) the gravity of the situation considering the fact that Texas had not utilized any of the previous water plans.[151]

Senate Bill 1 serves a tripartite function of water resource planning, management, and development.[152] In effect, it "splits regulatory oversight and responsibility among three state agencies."[153] The Texas Water Development Board (TWDB),[154] the Texas Commission on Environmental Quality (TCEQ) (formerly the Texas Natural Resource Conservation Commission), and the Texas Parks and Wildlife Department now share responsibilities for water resources.[155] The effects of Senate Bill 1 are seen in the *Sipriano* case, where the Texas Supreme Court declined to

142. *Id.* at 210.
143. *See* Tex. Co. v. Burkett, 296 S.W. 273 (Tex. 1927); Drummond, *supra* note 46, at 211.
144. TEX. WATER CODE ANN. § 11.021 (Vernon 2000); Drummond, *supra* note 46, at 211.
145. *See* Drummond, *supra* note 46, at 211.
146. *See Tex. Co.*, 296 S.W. at 278.
147. Act of June 2, 1997, 75th Leg., R.S., ch. 1010, 1997 Tex. Gen. Laws 3610 (codified and amended in various sections of TEX. WATER CODE ANN.).
148. Martin Hubert, *Senate Bill 1, The First Big and Bold Step Toward Meeting Texas's Future Water Needs*, 30 TEX. TECH L. REV. 53, 54 (1999) (including an endorsement by then Lieutenant Governor Bob Bullock).
149. *Id.* at 55.
150. *Id.*
151. *Id.* at 55-56.
152. *Id.* at 54.
153. Drummond, *supra* note 46, at 206.
154. *See* TEX. WATER CODE ANN. § 6.012 (Vernon 2000).
155. Hubert, *supra* note 148, at 56.

make a sweeping change to the rule of capture opting instead to let the new legislation develop.[156]

In regards to groundwater, Senate Bill 1 authorizes a more aggressive management scheme at the local level, more resources for groundwater management, and more accountability when groundwater management is undertaken.[157] But the most significant effect of Senate Bill 1 is the strengthening and expansion of Groundwater Conservation Districts (GCDs).[158] Although article 4 of the bill does not expressly overrule the rule of capture, it places greater emphasis on GCDs, giving them more regulatory power.[159] According to Senate Bill 1, GCDs are the most preferred method of groundwater management.[160] GCDs are preferred primarily because they require local control.[161] This places the management of groundwater in the hands of those most familiar with the groundwater in that particular district.[162]

2. *Groundwater Conservation Districts*

GCDs are localized districts that assist in "groundwater management by preventing waste, performing research, and protecting the aquifer," among other things.[163] Although GCDs have been in existence in some form for the past fifty years,[164] under Senate Bill 1, the requirements for groundwater withdrawal in the districts are more stringent.[165] Some specific duties and rights of GCDs include issuing well permits, preventing waste, imposing limits on well spacing and production, regulating water transfers between districts, transporting and distributing groundwater and surface water, acquiring and selling property, and levying property taxes.[166] Currently, Texas has eighty-three confirmed GCDs, but four more districts are pending confirmation from the TCEQ.[167] The Groundwater Conservation Districts map illustrates the location of all confirmed and pending GCDs overlaying a map divided by counties within Texas.[168] GCDs can be created in a number of ways, including special legislative sessions, petitions by property owners, or by the TCEQ.[169]

---

156. *Sipriano*, 1 S.W.3d at 80; Drummond, *supra* note 46, at 206.
157. Hubert, *supra* note 148, at 65.
158. Hardberger, *supra* note 15, at 1241.
159. Drummond, *supra* note 46, at 206.
160. TEX. WATER CODE ANN. § 36.0015 (Vernon 2000); Hubert, *supra* note 148, at 65.
161. Hubert, *supra* note 148, at 66.
162. *See id.*
163. Hardberger, *supra* note 15, at 1241.
164. Drummond, *supra* note 46, at 207.
165. Hubert, *supra* note 148, at 66.
166. TEX. WATER CODE ANN. §§ 36.002, 36.101 (Vernon 2000); Drummond, *supra* note 46, at 206.
167. TEX. WATER DEV. BD., GROUNDWATER CONSERVATION DISTS.: CONFIRMED & PENDING CONFIRMATION, *available at* http://www.twdb.state.tx.us/mapping/maps/pdf/gcd_only_8x11.pdf (last modified Jan. 19, 2005); *See* Drummond, *supra* note 46, at 206.
168. *See* Groundwater Conservation Districts map, *available at* http://www.twdb.state.tx.us/mapping/maps/pdf/gcd_only_8x11.pdf (last modified Jan. 19, 2005).
169. Hardberger, *supra* note 15, at 1241.

In addition to establishing GCDs, Senate Bill 1 demands more accountability in the form of groundwater management plans from GCDs.[170] These plans must address the following management goals: "(1) providing the most efficient use of groundwater; (2) controlling and preventing waste of groundwater; (3) controlling and preventing subsidence; (4) addressing conjunctive surface water management issues; (5) addressing natural resource issues; (6) addressing drought conditions; and (7) addressing conservation."[171] Moreover, while GCDs have developed groundwater management plans in the past, these plans must now be more comprehensive and certified by the TWDB when the plan is administratively complete.[172] The State Auditor has authority to audit all groundwater district plans one year after their original certification.[173] These audits determine whether the GCD's management plan is operational.[174] If the district is not operational, the TCEQ "has the authority to take the appropriate action necessary to produce comprehensive management in the district."[175]

3. *Priority Groundwater Management Areas*

In addition to GCDs, Senate Bill 1 focuses on areas the TCEQ and TWDB have identified as possibly experiencing substantial groundwater problems in the next twenty-five years.[176] These areas, formerly referred to as critical areas, are now known as Priority Groundwater Management Areas (PGMAs).[177] But an area may not be declared a PGMA until the TCEQ has conducted a detailed study of that area.[178] Current PGMAs include the Briscoe, Hale, and Swisher County Critical Area; the Dallam County Critical Area; the Hill Country Critical Area; the Regan, Upton, and Midland County Critical Area, and the El Paso Critical Area.[179] The Groundwater Conservation Districts with Groundwater Management Areas and Priority Groundwater Management Areas map shows the five existing PGMAs overlying the GCDs in Texas.[180] PGMAs are protected by GCDs; thus Senate Bill 1, through its establishment and regulation of GCDs, has streamlined the process for creating PGMAs.[181] Through the

170. Hubert, *supra* note 148, at 66.
171. TEX. WATER CODE ANN. § 36.1071 (Vernon 2000).
172. TEX. WATER CODE ANN. § 36.1072 (Vernon 2000); *See* Hubert, *supra* note 148, at 66.
173. Hubert, *supra* note 148, at 66.
174. *Id.*
175. Hubert, *supra* note 148, at 66; *see also* TEX. WATER CODE ANN. § 36.303 (Vernon 2000).
176. Hubert, *supra* note 148, at 67.
177. *Id.*
178. Drummond, *supra* note 46, at 207 n.290.
179. TEX. WATER DEV. BD., GROUNDWATER CONSERVATION DISTS. WITH GROUNDWATER MGMT. AREAS & PRIORITY GROUNDWATER MGMT. AREAS, *available at* http://www.twdb.state.tx.us/mapping/maps/pdf/gcd_gma_pgma_24x24.pdf (last modified Jan. 19, 2005) [hereinafter TEXAS WATER DEVELOPMENT BOARD].
180. *See id.*
181. Hubert, *supra* note 148, at 67.

implementation of PGMAs and strengthening of GCDs, Senate Bill 1 has helped to make Texas groundwater law less reliant on the rule of capture.

B. Mexican Groundwater Law

As mentioned above, Mexico distinguishes its water law based on whether the water is private or public.[182] In Mexico, water is national property.[183] According to paragraph 5 of article 27 of the Mexican Constitution of 1917, "[o]wnership of the lands and waters within the boundaries of the national territory is vested originally in the Nation, which has had, and has, the right to transmit title thereof to private persons, thereby constituting private property."[184] Thus, while water may be privately owned, the government may place limits on ownership if the public interest so demands.[185] Additionally, the Mexican Constitution specifically addresses groundwater in article 27 which states:

> Underground waters may be brought to the surface by artificial works and utilized by the surface owner, but if the public interest so requires or use by others is affected, the Federal Executive may regulate its extraction and utilization, and even establish prohibited areas, the same as may be done with other waters in the public domain.[186]

Therefore, although private landowners can withdraw and utilize groundwater, that right may be taken away or limited by the Mexican government whenever the government feels that it is necessary to best further the public interest. Mexico has reinforced this idea by passing legislation that supports governmental control of groundwater including Le Ley de Conservacion del Suelo y Aguas (The Law of Conservation of Groundwater of 1956), which established restricted zones and a permit system for withdrawal of groundwater.[187] More recently, Mexico created the Comision Nacional de Aguas (CNA) to provide and regulate the use of water.[188] The difference between the Mexican rule authorizing government intervention and the rule of capture in Texas evidences one reason why a uniform system of groundwater allocation has been difficult to achieve.[189]

---

182. Hardberger, *supra* note 15, at 1243; *see* discussion *supra* Part II(A)(4).
183. Octavio E. Chavez, *Mining of Internationally Shared Aquifers: The El Paso-Juarez Case*, 40 Nat. Resources J. 237, 241 (2000).
184. Constitucion Politica de los Estados Unidos Mexicanos [Const.], *as amended*, Diario Oficial de la Federacion [D.O.], 5 de Febrero de 1917 (Mex.), art. 27 [hereinafter Mexico Const.]; Barber, *supra* note 3, at 662.
185. Barber, *supra* note 3, at 662.
186. Mexican Const., *supra* note 184, art. 27; Barber, *supra* note 3, at 662.
187. *See* Hardberger, *supra* note 15, at 1243-44 (internal citations omitted).
188. *See* Bennett & Herzog, *supra* note 10, at 981.
189. *See* Hardberger, *supra* note 15, at 1244.

C. International Agreements

As discussed previously, the United States and Mexico have historically relied on treaties or agreements to govern their various water sources.[190] While these treaties have not truly solved any groundwater problems, the agreements currently in effect are somewhat more effective at managing the shared water sources. Looking at current treaties and the organizations those treaties have established to manage surface and groundwater should prove beneficial in developing a more functional and efficient agreement between the United States and Mexico.

1. The 1944 Treaty

After the 1906 Rio Grande Convention failed to significantly resolve the dispute between the United States and Mexico, there was a down time for several years during which both nations made little effort to negotiate a workable water treaty.[191] But in the late 1920s, both sides began to discuss a possible treaty.[192] Although nothing happened immediately, in February 1944, the United States and Mexico entered into a new treaty to govern their international watercourses.[193]

The 1944 Treaty purported to designate the rights of the United States and Mexico to the Colorado and Tijuana Rivers, and to the Rio Grande from Fort Quitman, Texas to the Gulf of Mexico.[194] The treaty, in article 4, created a schedule of water rights to allot the Rio Grande's waters to the United States and Mexico.[195] Specifically, the treaty allocated to Mexico,

> (a) All of the waters reaching the main channel of the Rio Grande (Rio Bravo) from the San Juan and Alamo Rivers, including the return flow from the lands irrigated from the latter two rivers. (b) One-half of the flow in the main channel of the Rio Grande (Rio Bravo) below the lowest major international storage dam, so far as said flow is not specifically allotted under this Treaty to either of the two countries. (c) Two-thirds of the flow reaching the main channel of the Rio Grande (Rio Bravo) from the Conchos, San Diego, San Rodrigo, Escondido and Salado Rivers and the Las Vacas Arroyo, subject to the provisions of subparagraph (c) of paragraph B of this Article. (d) One-half of all other flows not otherwise allotted by this Article occurring in the main channel of the Rio Grande (Rio Bravo), including the contributions from all the unmeasured tributaries, which are those not named in this Article, between Fort Quitman and the lowest major international storage dam.[196]

---

190. *See* discussion *supra* Part II(B).
191. *See* Schiff, *supra* note 6, at 123.
192. *Id.*
193. Treaty Between the United States of America and Mexico Respecting Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande, U.S.-Mex., Feb. 3, 1944, 59 Stat. 1219 [hereinafter 1944 Treaty]; Ingram, *supra* note 8, at 171.
194. Barber, *supra* note 3, at 683.
195. *See* 1944 Treaty, *supra* note 193, art. 4; Ingram, *supra* note 8, at 171.
196. 1944 Treaty, *supra* note 193, art. 4(A).

Correspondingly, the United States was to receive the other half of the Rio Grande between Fort Quitman and the Gulf of Mexico and one-third of the water from the Conchos, San Diego, San Rodrigo, Escondido, and Salado Rivers and Las Vacas Arroyo.[197] Today, Mexico must deliver 350,000 acre-feet of Rio Grande water to the United States annually while the United States must deliver 1.5 million acre-feet of water to Mexico from the Colorado River.[198] Despite the extensive details in allocating the surface water between the United States and Mexico, the 1944 Treaty does not specifically address groundwater.[199] But the IBWC, a governing body created by the 1944 Treaty, has the potential to monitor groundwater for internationally shared aquifers.[200]

Besides allocating the surface water, the 1944 Treaty instructs that if Mexico fails to deliver its required amount of water to the United States because of extraordinary drought, it must make up for the deficiency in the subsequent five-year period.[201] Additionally, in repaying for its deficiency, Mexico is required to pay double, meaning the debt from the previous five-year period plus the next five-year period's allotment.[202] Mexico has been incurring a water debt like this since the extensive drought of the mid-1990s but has not yet been able to repay it.[203] As of 2003, Mexico's debt to the United States was 1.37 million acre-feet of water.[204]

2. *The International Boundary Water Commission*

In addition to designating the water rights for the United States and Mexico, the 1944 Treaty extended the scope of the IBC by creating the IBWC.[205] The IBWC serves as an agent of the United States and Mexico in their search for the equitable allocation of water to both nations.[206] The stated mission of the IBWC is:

> To apply the rights and obligations which the Governments of the United States and Mexico assume under the numerous boundary and water treaties and related agreements, and to do so in a way that benefits the social and economic welfare of the peoples on the two sides of the boundary and improves relations between the two

197. *See id.* art. 4(B); Ingram, *supra* note 8, at 171.

198. 1944 Treaty, *supra* note 193, art. 4(B); Ingram, *supra* note 8, at 171.

199. Douglas L. Hayes, *The All-American Canal Lining Project: A Catalyst for Rational and Comprehensive Groundwater Management on the United States-Mexico Border*, 31 NAT. RESOURCES J. 803 (1991).

200. Chavez, *supra* note 183, at 241-42.

201. 1944 Treaty, *supra* note 193, art. 4(B)(d); Ingram, *supra* note 8, at 171.

202. 1944 Treaty, *supra* note 193, art. 4(B)(d); Ingram, *supra* note 8, at 172.

203. Ross E. Milloy, *A Rift over Rio Grande Water Rights*, N.Y. TIMES, Sept. 18, 2001, at A14; Schiff, *supra* note 6, at 118.

204. Schiff, *supra* note 6, at 132.

205. 1944 Treaty, *supra* note 193, art. 1; Ingram, *supra* note 8, at 172.

206. Dworsky & Utton, *supra* note 20, at 442.

countries.[207]

Additionally, the IBWC has a larger jurisdiction than the former IBC had because the IBWC covers inland areas where international dams exist, as well as the Rio Grande.[208] The IBWC also maintains two separate headquarters—one in El Paso, Texas and the other in Ciudad Juarez, Mexico.[209]

In addition to allocating water between the United States and Mexico, the 1944 Treaty empowers the IBWC to settle all disputes arising under the treaty.[210] Article 24 declares the IBWC as the first and normally final arbiter of disputes.[211] Subparagraph (c) gives the IBWC supervisory powers, while subparagraph (d) grants the IBWC the role of settling disputes.[212] The IBWC must also administer all treaties regarding the Colorado, Rio Grande, and Tijuana Rivers.[213] Because the IBWC's duties include treaty interpretation, dispute resolution, and "operational responsibilities for managing both the border and international dams," it operates as a sort of a bureaucratic hybrid.[214] These varied responsibilities have caused the IBWC to function in an ad hoc manner as opposed to taking a proactive planning approach.[215]

The IBWC maintains the status of an international body with separate Mexican and U S. sections.[216] But despite the diplomatic status of IBWC commissioners, they traditionally operate as protectors of their respective national sovereign interests.[217] Naturally, this division of interests has led to an adversarial relationship between the Mexican and American commissioners.[218] Because of the independent status of the Mexican and U.S. sections of the IBWC and the self-protective relationships that have ensued, the IBWC must change in order to deal with the controversies existing in the twenty-first century.[219] But an encouraging prospect exists whether the IBWC modifies its role or merely enacts new agreements. As mentioned earlier, the 1944 Treaty does not specifically address groundwater,[220] but "recent working groups and policy discussions indicate that the future of the IBWC will include groundwater."[221]

207. IBWC, The International Boundary and Water Commission, Its Mission, Organization, and Procedures for Solution of Boundary and Water Problems, http://www.ibwc.state.gov/html/about_us.html (last visited Feb. 15, 2005) [hereinafter IBWC].
208. 1944 Treaty, *supra* note 193, art. 2; IBWC, *supra* note 207, ¶¶ 1-4.
209. IBWC, *supra* note 207, ¶ 4.
210. Barber, *supra* note 3, at 683.
211. 1944 Treaty, *supra* note 193, art. 24; Schiff, *supra* note 6, at 131.
212. 1944 Treaty, *supra* note 193, arts. 24(c)-(d); Schiff, *supra* note 6, at 131.
213. Dworsky & Utton, *supra* note 20, at 415.
214. Ingram, *supra* note 8, at 172-73.
215. *Id.* at 173.
216. *Id.* at 172.
217. *Id.*
218. *Id.* at 181.
219. *Id.* at 181-82.
220. *See* discussion *supra* Part III(C)(1).
221. Hardberger, *supra* note 15, at 1237.

3. Current Agreements

Although no official groundwater agreement exists between the United States and Mexico, several agreements are in place that either, (1) pertain to surface water but can relate to groundwater, or (2) are informal agreements covering groundwater.[222] One such agreement is the Minute of the 1944 Treaty.[223] Under article 25 of the 1944 Treaty, the IBWC develops rules and issues decisions in minutes.[224] Minutes are considered approved by both governments and then binding if neither government objects to the minute within thirty days.[225] Although minutes may be considered an executive agreement if both countries ratify them, they are not the equivalent of a formal treaty.[226] Thus, minutes are helpful in the current situation, but not a real cure to the existing problems.

a. Minute 242

Minute 242 has been called "[t]he closest approximation to an existing groundwater agreement along the U.S.-Mexico border."[227] Signed in 1973, it recognizes that an agreement concerning groundwater between the United States and Mexico is necessary.[228] Although Minute 242 primarily deals with water quality and salinity, it also specifically addresses groundwater:[229]

> With the objective of avoiding future problems, the United States and Mexico shall consult with each other prior to undertaking any new development of either the surface or the groundwater resources, or undertaking substantial modifications of present developments, in its own territory in the border area that might adversely affect the other country.[230]

In addition, Minute 242 calls for a limit to groundwater pumping until both nations create a more inclusive agreement.[231] Finally, the agreement requires that both countries communicate about new developments of groundwater resources.[232] For these reasons, it has been asserted that Minute 242 brought groundwater within the scope of the 1944 Treaty.[233] But while Minute 242 was a step in the right direction of managing the

222. *Id.* at 1237-38.
223. Ingram, *supra* note 8, at 188.
224. 1944 Treaty, *supra* note 193, art. 25; Ingram, *supra* note 8, at 188.
225. Barber, *supra* note 3, at 684.
226. *Id.*
227. Hardberger, *supra* note 15, at 1238.
228. *See* IBWC, Permanent and Definite Solution to the International Problem of the Salinity of the Colorado River, Minute No. 242, Aug. 30, 1973, U.S.-Mex., 24 U.S.T. 1971, *available at* http://www.usbr.gov/lc/region/pao/pdfiles/min242.pdf [hereinafter Minute 242]; Hardberger, *supra* note 15, at 1238.
229. Minute 242, *supra* note 228, ¶¶ 5-6.
230. *Id.* ¶ 6; Barberis, *supra* note 39, at 180.
231. Hardberger, *supra* note 15, at 1238.
232. Minute 242, *supra* note 228, ¶ 6.
233. Stephen P. Mumme, *Minute 242 and Beyond: Challenges and Opportunities for Managing Transboundary Groundwater on the Mexico-U.S. Border*, 40 NAT. RESOURCES J. 341, 342 (2000).

groundwater dispute, the goal of that IBWC decision remains unfulfilled.[234]

b. Bellagio Draft Treaty

Because former and existing treaties and agreements governing shared groundwater between the United States and Mexico do not address specific issues like pollution and subsidence, scholars worked for eight years writing an agreement that could function as a starting point.[235] That agreement, known today as the Bellagio Draft Treaty, "provides a model for how countries can initiate a joint study of the resources and cooperatively manage the shared supply."[236] The Bellagio Draft Treaty can be used by nations attempting to create an international water policy, as it was inspired by the water situation along the United States-Mexico border.[237] "The overriding goal of the draft treaty is to achieve joint, optimum utilization of the available waters, facilitated by procedures for avoidance or resolution of differences over shared groundwaters in the face of the ever increasing pressures on this priceless resource."[238]

The authors of the Draft Treaty believed that determining water rights by mutual agreement was superior to rights achieved by unilateral taking.[239] Additionally, the drafters felt that any rational conservation or protection action required the resource management of all parties involved in the agreement.[240] One scholar has summarized the principles of the Draft Treaty in the following way:

> First, it draws a connection between the customary international law on surface waters and that on groundwaters. Second, it links the supply and quality of groundwater, and balances the emphasis on allocation with an emphasis on water quality management and public health. Third, it emphasizes that the twin goals of (1) "optimum utilization and conservation" and (2) "the need to protect the underground environment" must be balanced on "an equitable and reasonable basis." Fourth, it emphasizes the need for the parties "to develop and maintain reliable data and information concerning transboundary aquifers and their waters." Finally, the Draft Treaty emphasizes the value of establishing transboundary groundwater conservation areas and conservation management plans.[241]

Such principles show the importance of the United States and Mexico being flexible and fair in proposing solutions to the groundwater dis-

234. Hardberger, *supra* note 15, at 1238; Mumme, *supra* note 233, at 342.
235. Marilyn C. O'Leary, *The Bellagio Draft Treaty as a Tool for Solving Border Groundwater Issues*, 11 U.S.-MEX. L.J. 57, 58 (2003); Barber, *supra* note 3, at 691.
236. O'Leary, *supra* note 235, at 58.
237. Hardberger, *supra* note 15, at 1232.
238. Robert D. Hayton & Albert E. Utton, *Transboundary Groundwaters: The Bellagio Draft Treaty*, 29 NAT. RESOURCES J. 663, 665 (1989).
239. *Id.* at 664.
240. *Id.*
241. Mumme, *supra* note 233, at 358.

pute.[242] Apart from the five tenets listed, the treaty also outlines tools for managing shared international aquifers.[243] Moreover, the Draft Treaty contains guidance for water quality protection, dispute resolution, and management plans in order to achieve the optimum utilization of shared groundwater resources.[244]

Perhaps the most beneficial aspect of the Bellagio Draft Treaty is the structure it envisions through which the United States and Mexico can communicate about the management of their shared aquifers.[245] The Draft Treaty describes this structure as a bilateral institution where both nations participate in the study and management of shared groundwater resources.[246] This bilateral institution should take the form of a joint commission with the task of "carefully managing the development of the aquifer and associated surface waters."[247] It has been suggested that the IBWC would be an appropriate agency to take on this role, since it has already operated in this manner.[248] But due to the difficulties the IBWC has faced because of the adversarial nature of both independent nations, this may not be the most effective option.[249] A modified IBWC could function as the commission proposed by the Bellagio Draft Treaty. Another option would be the creation of an entirely new commission to specifically fit what the authors of the Draft Treaty envisioned.

4. International Groundwater Law

International law governs the relations between sovereign states, and is based on the notion that all states have equal dignity.[250] The principal sources of international law generally are treaties and custom.[251] But when it comes to international water law specifically, the principal sources are: "(1) the United States law of equitable apportionment, (2) international non-navigational use rules developed by international consultative bodies, (3) bi- or multi-national treaties allocating the uses of specific river basins or creating a regime of shared waters and (4) the developing law of state liability for environmental injury."[252]

While the original theory behind international water use was absolute territorial sovereignty, this has been replaced by the principle of limited territorial sovereignty.[253] Absolute sovereignty held that each state could use the water within its border any way it chose, owing no duty to neigh-

242. *Id.*
243. O'Leary, *supra* note 235, at 58.
244. Hardberger, *supra* note 15, at 1233.
245. O'Leary, *supra* note 235, at 58.
246. *Id.*
247. *Id.* at 59.
248. Barber, *supra* note 3, at 691.
249. *See* discussion *supra* Part III(C)(2).
250. TURLOCK, *supra* note 17, § 11:2.
251. *Id.*
252. *Id.*
253. *Id.* § 11:4.

boring states.[254] U.S. Attorney General Harmon developed this principle in 1895 as a result of the United States-Mexican dispute over the Rio Grande.[255] Limited territorial sovereignty, on the other hand, follows the main common law and civil law principle of riparian rights–that all states sharing a watercourse have the right to use that resource.[256]

While historically the principles of international water law have been guided by absolute or limited territorial sovereignty, today the law of international groundwater law is shaped by four guiding principles.[257] "These . . . include the obligation not to cause appreciable harm, the duty of equitable and reasonable use, the obligation of prior notification, and the duty to negotiate."[258] The obligation not to cause appreciable harm includes ensuring that activities within a state's jurisdiction or control do not cause damage to another state's environment or areas exceeding the limits of the state's national jurisdiction.[259]

The rule of equitable and reasonable use applies both to the apportionment of groundwater as well as the use of such sources.[260] As applied to aquifer use, this means tailoring withdrawals to coincide with the recharge of that source.[261] When considering apportionment, each nation should receive benefits that provide maximum utilization from the distribution of the shared aquifer.[262] It has been argued that the United States and Mexico do not have reasonable and equitable apportionment because the American side of the border has its needs met more sufficiently than the Mexican side.[263] But when two nations share an aquifer, as the United States and Mexico do, the equitable solution would be that each country may withdraw the proportionate shared of the aquifer lying in its territory.[264]

Finally, if a nation is uncertain whether a groundwater withdrawal will cause appreciable harm or whether such use will be equitable or reasonable, it has a duty to provide prior notification and negotiate any withdrawal or use with the neighboring country.[265] Thus, nations should "establish a procedure whereby each will communicate the plan and the necessary data to the other for determination of the likely effects of the project on the groundwater."[266] By following the established international groundwater law principles and looking to the treaties that have been effective, the United States and Mexico should be able to create a

254. *Id.*; Stephen C. McCaffrey, *The Harmon Doctrine One Hundred Years Later: Buried, Not Praised*, 36 NAT. RESOURCES J. 725 (1996).
255. McCaffrey, *supra* note 254, at 725.
256. TURLOCK, *supra* note 17, § 11:4.
257. *See* Barberis, *supra* note 39, at 167.
258. *Id.*
259. *Id.* at 170.
260. *Id.* at 176.
261. *See id.*
262. *Id.* at 177.
263. *See generally* Chavez, *supra* note 183.
264. Barberis, *supra* note 39, at 177-78.
265. *Id.* at 178.
266. *Id.*

new agreement, or at least modify an existing one, which adequately manages the aquifers the nations share along the Texas-Mexico border.

IV. SUGGESTIONS

As discussed throughout this comment, the United States, more specifically Texas, and Mexico have had water disputes for over 150 years.[267] Although the implementation of several agreements and treaties has somewhat alleviated the problem, the concern over the quantity and quality of international groundwater resources shows that a more complete solution is still necessary.[268] As the potential for conflict over ever-diminishing resources increases, it is vital to develop some way to manage this problem. Most suggestions revolve around the idea of a new agreement or treaty; but other legislative acts are possible as well.

A. Changing Texas Law

As seen earlier, Texas is one of only a few states that still adhere to the rule of capture. This led one scholar to conclude that the Texas legislature should discard the rule of capture as the controlling law of groundwater ownership.[269] He suggests adopting the correlative rights doctrine that allows for groundwater withdrawal from one's property as long as the amount taken does not exceed the proportionate size of the overlying property.[270] While there are several benefits to abandoning the rule of capture, it seems unlikely that this will have any real effect on the Texas-Mexico dispute. Because of the different laws and cultures of the two nations, an international agreement is necessary to truly aid the groundwater situation along the Texas-Mexico border.

B. Creating a New International Treaty

The purpose of any international groundwater agreement should be to successfully use and protect the shared aquifer in a fair and sustainable manner.[271] It should "be flexible enough to deal with different situations surrounding shared groundwater but specific enough to demand the cooperation necessary."[272] Any new agreement should encompass the four duties that serve as the basis for international groundwater law–not to cause appreciable harm, equitable and reasonable use, prior notification, and negotiation.[273] Several agreements presently exist that serve as good models for a new treaty governing United States–Mexico groundwater allocation.

---

267. *See* Hardberger, *supra* note 15, at 1234.
268. *See* Dworsky and Utton, *supra* note 20, at 442-43.
269. Drummond, *supra* note 46, at 224.
270. *Id.*
271. Hardberger, *supra* note 15, at 1250.
272. *Id.*
273. *See* discussion *supra* Part III(C)(4).

1. *The U.N. Convention on the Non-Navigational Uses of International Watercourses*

Mexico brought the Convention on International Watercourses before the United Nations for deliberation in 1997.[274] The United States, along with thirty-three other nations, co-sponsored the convention.[275] Both countries voted for adoption of the convention, but neither government had formally ratified it as of 2003.[276] But because the convention purports to follow equitable utilization and no significant harm, it could serve as a relevant tool to aid both nations as they attempt to solve continued groundwater allocation problems.[277]

A significant effect of the Convention on International Watercourses is its inclusion of groundwater in the terms. The drafters defined watercourse as "a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus," and international watercourse as any watercourse as "parts of which are situated in different States."[278] This is important because, as discussed earlier, no previous agreement on international water covered the issue of groundwater. While Minute 242 specifically addresses groundwater, it is essentially no more than an addendum to the 1944 Treaty.[279] Moreover, this definition acknowledges the interrelatedness of surface and groundwater in the hydrological cycle.[280] This recognition is important because it means that an aquifer does not have to actually sit on both sides of an international border to be considered international water, as long as that aquifer is hydraulically related to a river that crosses or forms an international border.[281] For example, an aquifer that is located only in Texas but somehow connected to the Rio Grande would be considered international groundwater. Thus, by incorporating groundwater in its provisions, the Convention on International Watercourses could become the precedent that future agreements look to in shaping international groundwater disputes.

In addition to the importance of the terms of the convention, all provisions of the convention may be incorporated into existing treaties.[282] Therefore, the terms including groundwater in the definition of watercourse could be absorbed into the 1944 Treaty relating specifically to the

274. Convention on the Law of The Non-Navigational Uses of International Watercourses, G.A. Res. 51/229, U.N. GAOR, 51st Sess., U.N. Doc. A/RES/51/229 (Apr. 11, 1997), *reprinted in* 36 I.L.M. 700 [hereinafter International Watercourse Convention]; Ingram, *supra* note 8, at 196.
275. Ingram, *supra* note 8, at 196.
276. *Id.*
277. *Id.* at 198.
278. International Watercourse Convention, *supra* note 274, arts. 2(a)-(b), 36 I.L.M. at 704.
279. *See* Barber, *supra* note 3, at 684.
280. Eckstein, *supra* note 29, at 229.
281. *Id.* at 229-30.
282. *See* International Watercourse Convention, *supra* note 274, arts. 3(1)-(2), 36 I.L.M. at 705.

United States and Mexico.[283] This is not a complete solution, however, because the 1944 Treaty's allocation provisions relate to specific rivers, simply incorporating groundwater into this agreement would not prove all that helpful in managing the aquifers shared between Texas and Mexico.[284] Despite the benefits of the Convention on International Watercourses, it is likely too broad to serve as anything more than general guidance in a new treaty.

2. Revitalized 1944 Treaty

Rather than drafting an entirely new treaty or creating a new commission, it has often been suggested that the 1944 Treaty could be revitalized.[285] This would include adding a new policy minute which would focus on shared responsibilities, long-term strategies, and heightened application of international legal norms and principles.[286] Obviously, the new 1944 Treaty would need to specifically address groundwater, but as discussed earlier, this is possible through the Convention on International Watercourses. A new 1944 Treaty would be beneficial, but it would still not be the exact groundwater agreement that both countries need. Because of the limited area of the Rio Grande region, Texas and Mexico should look to an agreement that is more limited and localized.

3. Franco-Swiss Genevese Aquifer Agreement

The 1978 agreement between France and Switzerland pertaining to shared groundwater resources in the Lake Geneva Basin is the only international agreement that specifically addresses an international aquifer.[287] One of the most important features of this agreement is that it is regional rather than national in nature.[288] By serving as an arrangement between local authorities, the agreement directly meets the needs of those affected most by the aquifer.[289] The agreement also provides for a commission comprised of members from both nations that creates annual plans for aquifer use and groundwater protection measures.[290] This seems similar to the IBWC; but one difference is that the Franco-Swiss Aquifer Agreement has been successful in managing the shared aquifer.[291] The agreement achieved success by focusing on equitable utilization while avoiding the ideas of territorial sovereignty in order to fulfill the needs of the Lake

283. *See* Ingram, *supra* note 8, at 199.
284. *See* 1944 Treaty, *supra* note 195, art. 4.
285. *See, e.g.,* Ingram, *supra* note 8, at 191.
286. *Id.* at 191-93.
287. Eckstein, *supra* note 29, at 227 (citing the Arrangement of the Protection, Utilization, and Recharge of the Franko-Swiss Genevese Aquifer, Fr.-Switz., Sept. 1977, *available at* http://www.internationalwaterlaw.org/RegionalDocs/Franko-Swiss-Aquifer.htm).
288. Hardberger, *supra* note 15, at 1232.
289. *See id.*
290. *Id.*
291. *See id.* at 1231.

Geneva area.[292]

Texas and Mexico could develop a similar agreement that applies to all the shared groundwater along the border.[293] Such an agreement would need to be tailored to address the specific needs of the border area and the aquifers located in that region.[294] Because any new agreement should also have a commission or governing body to enforce the agreement and plan for future needs, the IBWC is the most obvious choice to serve this function.[295] Perhaps Texas and Mexico could model the Franco-Swiss Aquifer Agreement by also having water specialists serve on the IBWC, and trying to attain equitable utilization rather than each nation's representatives trying to enforce the goals of their respective country. But whether the IBWC operates as the commission or an entirely new commission is created, the control should be kept at the local level, similar to the Franco-Swiss Agreement and the Groundwater Conservation Districts in Texas. By allowing the IBWC comprised of both Americans and Mexicans to serve as this body and keeping the control localized and specific to the Rio Grande area, Texas and Mexico may find a mutually beneficial solution to their groundwater dispute.

V. CONCLUSION

The area near the border between Texas and Mexico has struggled with its water supply for as long as the Rio Grande has served as the international boundary. As surface water has diminished, the importance of groundwater has grown. Today the conflict between the two states centers around several shared aquifers, either crossing the border or linked through the hydrologic system to the Rio Grande. Achieving a resolution has proven difficult because the law has historically treated groundwater differently than surface water. As a result, most water agreements in the past have either addressed only surface water or mentioned groundwater simply as an afterthought to the main water law.

Groundwater law has evolved over the years, beginning with the rule of absolute ownership in England and later being modified by the reasonable use rule in the United States. But Texas has continued to follow the doctrine of absolute ownership or, as it is more commonly referred to in Texas, the rule of capture. In contrast, Mexican groundwater law, developed from Spanish law, has been characterized by Roman and Moorish customs. These influences include the distinction between the right to use water and the ownership of that water, and the notion that water belongs to the community. Texas and Mexico have attempted to resolve the differences in their laws through the use of agreements and international organizations including the Treaty of Guadalupe Hidalgo, the IBC, and the 1906 Rio Grande Convention.

292. *Id* at 1254.
293. *See id.*
294. Hardberger, *supra* note 15, at 1254
295. *See id.* at 1256.

While Texas still adheres to the rule of capture generally, this has been modified by the passage of Senate Bill 1. That legislation calls for increased focus on groundwater with control concentrated mostly at the local level. Senate Bill 1 accomplishes this reform by strengthening GCDs and focusing on especially critical areas known as PGMAs. Conversely, Mexico still retains the distinction between public and private groundwater. As in the past, Texas and Mexico rely on agreements and treaties to allocate their respective water uses and rights. The 1944 Treaty specifically allocated the surface water to the United States and Mexico and also created the IBWC, which serves as the international organization governing water disputes between both nations. Minute 242 of the IBWC is one of the few agreements to specifically address groundwater, but does not have the force of a treaty. Additionally, the Bellagio Draft Treaty provides a workable framework for the United States and Mexico to create a more beneficial water policy.

Examining international water law–from its original theory of absolute territorial sovereignty to the modern obligations not to cause harm and equitable and reasonable use–gives a helpful outline for Texas and Mexico to follow in developing a better-functioning groundwater agreement. Because an international agreement is the most viable option for resolving the water allocation issues between the two nations, the U.N. Convention on International Watercourses serves as a starting point for any agreement relating to the border area. But since the convention is so broad, a more localized agreement should be created for Texas and Mexico. Thus, an agreement like the Franco-Swiss Aquifer Agreement that utilizes an international body to govern and plan for specific international aquifers emerges as the best option. By allowing the IBWC comprised of both Americans and Mexicans to serve as this body and by keeping the control localized and specific to the Rio Grande area, both Texas and Mexico should be able to maintain an adequate water supply.

Documentation